IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	:	
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Sande et al.	:	Attorney Docket No.: 43315-234867
	:	
Application No.: 10/590,028	:	Art Unit: 2169
	:	
Filed: October 30, 2007	:	Examiner: B. Mccue

Title: METHOD, COMPUTER-BASED-SYSTEM AND VIRTUAL ASSET REGISTER

BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This brief is submitted pursuant to the notice of appeal filed December 14, 2011.

Real Party In Interest

The real party in interest in this appeal is the assignee, ABB Technology Ltd., Affolternstrasse 44, CH-8050 Zürich, Switzerland, by virtue of an assignment from the inventors to ABB Technology Ltd., which was recorded in the U.S. Patent and Trademark Office on October 30, 2007, at reel 020109, frame 0486.

Related Appeals and Interferences

Applicants are unaware of any related appeals or interferences which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims

The application as filed included claims 1-32. In a preliminary amendment submitted August 17, 2006, with the application, Applicants amended claims 1-15 and 17-32 and cancelled claim 16. In a response submitted April 10, 2009, to the office action issued December 10, 2008, Applicants amended claims 1, 5-7, 15, 17, 19, 20, 29, 30, and 32. In a response submitted October 19, 2009, to the final office action issued July 17, 2009, Applicants amended claim 1, 15 and 17. In an advisory action issued October 23, 2009, the Examiner indicated that that the response would not be entered. On December 15, 2009, Applicants submitted a request for continued examination. In a response submitted July 27, 2010, to the office action issued April 27, 2010, Applicants amended claims 1-4, 6, 15, 17, 22, 23, 28, and 30. In a response submitted

January 13, 2011, to the office action issued October 13, 2010, Applicants amended claims 1, 15, 17, 22, 23, and 27 and cancelled claims 11 and 21. In an advisory action issued January 28, 2011, the Examiner indicated that that the response would not be entered. On February 14, 2011, Applicants submitted a request for continued examination. In a response submitted September 1, 2011, to the office action issued May 6, 2011, Applicants did not amend the claims. In the final office action issued September 14, 2011, the Examiner finally rejected claims 1-10, 12-15, 17-20, and 22-32. On December 14, 2011, Applicants submitted a notice of appeal appealing the rejections of 1-10, 12-15, 17-20, and 22-32.

Status of Amendments

Applicants have not amended the claims subsequent to the final rejection.

Summary of Claimed Subject Matter

The invention recited in independent claim 1 includes a method for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks. (*See* page 1, lines 8-15; and Figs. 6-11 and 16.) The method includes providing the systems with user standard interfaces 5 having standard object-oriented navigation and selection, and input and display methods. (*See* page 4, lines 32-36; and Fig. 1.) The interfaces 5 are provided with context sensitive navigation functions that indicate which system is active. (*See* page 5, lines 3-7; page 8, line 34, through page 9, line 7; and Figs. 1 and 3.) A virtual asset register 10 is provided including elements of the systems. (See page 8, line 29; page

9, lines 23-25; page 12, line 25, through page 14, line 4; and Figs. 2, 12, and 13.) The virtual asset register includes a model for exchange of data between the systems (page 13, lines 18-10; and Figs. 13-16), a mechanism for data consistency in data exchange between the systems (page 13, lines 20-26; and Figs. 13-16), and cross-reference and mapping of relationships of the elements of the systems (page 13, lines 27-36; and Figs. 13-16). Similar elements in different systems are consistently represented in the virtual asset register. (*See* page 5, lines 7-10; page 11, lines 25-27; page 12, lines 25-27; and Figs. 3 and 12.) A new object 170 and data related to the new object are added into a first system. (*See* page 9, lines 7-10; page 15, lines 20-25; and Figs. 3 and 17.) A copy of the new object is added into a plurality of relevant systems. (*See* page 9, lines 7-8; page 15, lines 23-26; and Figs. 3 and 17.) The new object is registered in the virtual asset register. (*See* page 15, lines 23-24.) The new object is created in each relevant system based on object templates. (*See* page 15, line 25.) A connection between the relevant systems and the new object is automatically established. (*See* page 15, line 26.) Data related to the new object is replicated from the new object to other systems and relevant systems. (*See* page 15, line 36.) A consistency of accessed or retrieved data is established in the new object and relevant systems by checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register by identifying at least one of the new or a given object or copies of the new or a given object and comparing attributes of all copies of the same new or given object. (*See* page 5, lines 14-16; page 12, line 25, through page 13, line 2; page 13, line 20, through page 14, line 4; page 14, lines 15-29; page 15, lines 20-36; and Figs. 12 and 14.) Data is requested relating to a target object included in one of the systems. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.) Relevant systems including data relating to the target object are identified. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.)

The data regarding the target object is retrieved from identified relevant systems utilizing the standard interfaces. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.)

As recited in claim 2, which depends from claim 1, the method may further include maintaining object connections for the new object and for any other object that is at least one of accessed, retrieved or stored by a SCADA system and by any system from the list of: GIS system, ERP system, CMMS system, PM system, WO system, WMS system. (*See* page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; and Figs. 4-10, 14-16 and 18.)

Claim 3, which depends from claim 2, recites that the method may further include mapping at least one of the new object or copies of the new object using a model based on a CIM/XML document. (See page 5, lines 10-12; page 8, lines 17-18; page 9, lines 20-21; page 12, lines 35-36; page 13, lines 18-19; page 16, line 14, through page 17, line 35; and Figs. 1, 2, and 12-16.)

According to claim 4, which depends from claim 2, the method may further include mapping attributes of at least one of the new object or copies of the new object using a model based on a CIM/XML document. (See page 3, lines 20-25; page 15, lines 20-36; and Figs. 13-16.)

As recited in claim 5, which depends from claim 1, the method may further include establishing the automatic connection or connections between copies of the same object in

different systems utilizing a CIM/XML layer. (See page 15, line 26.)

Claim 6, which depends from claim 1, recites that the method may further include mapping the new object utilizing a virtual asset register dependent on at least one of the CIM/XML layer or mapping. (*See* page 5, lines 7-12; and page 16, line 30, though page 17, line 3; and Figs. 12-16.)

According to claim 7, which depends from claim 7, the method may further include selecting an object utilizing an identifier in any the relevant system. (*See* page 10, lines 17-20; page 11, lines 35-36; and Figs. 5 and 19.)

As recited in claim 8, which depends from claim 7, the identifier may be a Uniform Resource Identifier compatible as an identifier with a standard for Resource Description Framework. (*See* page 16, lines 22-28.)

Claim 9, which depends from claim 4, recites that the method may further include accessing one or more object attributes of the new object and changing an object attribute of the new object in a source system. (*See* page 15, line 10.)

According to claim 10, which depends from claim 4, the method may further include updating an object attribute of the new object in the source system. (*See* page 9, lines 7-14; page 15, lines 20 and 35; and Fig. 3.)

As recited in claim 12, which depends from claim 1, the method may further include deleting an object by deleting the object in all relevant systems. (*See* page 9, lines 7-14; page 15, line 27; and Fig. 3.)

Claim 13, which depends from claim 12, recites that the method may further include deleting an object by deleting a defined object in each system. (*See* page 9, lines 7-14; page 15, line 28; and Fig. 3.)

According to claim 14, which depends from claim 13, the method may further include deleting an object by deleting object connections to a deleted object or deleted defined object. (*See* page 9, lines 7-14; page 15, line 29; and Fig. 3.)

The invention recited in independent claim 15 relates to a computer program product for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks. (*See* page 18, line 15, through page 20, line 18; and Fig. 19.) The computer program product includes a non-transitory computer readable medium and software code portions or computer code recorded on the computer readable medium to cause a computer or processor to carry out a method. (*See* page 18, line 15, through page 20, line 18; and Fig. 19.) The method includes providing the systems with user standard interfaces 5 having standard object-oriented navigation and selection, and input and display methods. (*See* page 4, lines 32-36; and Fig. 1.) The interfaces 5 are provided with context sensitive navigation functions that indicate which system is active. (*See* page 5, lines 3-7; page 8, line 34, through page 9, line 7; and Figs. 1 and 3.) A virtual asset register 10 is provided including elements of

the systems. (See page 8, line 29; page 9, lines 23-25; page 12, line 25, through page 14, line 4; and Figs. 2, 12, and 13.) The virtual asset register includes a model for exchange of data between the systems (page 13, lines 18-10; and Figs. 13-16), a mechanism for data consistency in data exchange between the systems (page 13, lines 20-26; and Figs. 13-16), and cross-reference and mapping of relationships of the elements of the systems (page 13, lines 27-36; and Figs. 13-16). Similar elements in different systems are consistently represented in the virtual asset register. (*See* page 5, lines 7-10; page 11, lines 25-27; page 12, lines 25-27; and Figs. 3 and 12.) A new object 170 and data related to the new object are added into a first system. (*See* page 9, lines 7-10; page 15, lines 20-25; and Figs. 3 and 17.) A copy of the new object is added into a plurality of relevant systems. (*See* page 9, lines 7-8; page 15, lines 23-26; and Figs. 3 and 17.) The new object is registered in the virtual asset register. (*See* page 15, lines 23-24.) The new object is created in each relevant system based on object templates. (*See* page 15, line 25.) A connection between the relevant systems and the new object is automatically established. (*See* page 15, line 26.) Data related to the new object is replicated from the new object to other systems and relevant systems. (*See* page 15, line 36.) A consistency of accessed or retrieved data is established in the new object and relevant systems by checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register by identifying at least one of the new or a given object or copies of the new or a given object and comparing attributes of all copies of the same new or given object. (*See* page 5, lines 14-16; page 12, line 25, through page 13, line 2; page 13, line 20, through page 14, line 4; page 14, lines 15-29; page 15, lines 20-36; and Figs. 12 and 14.) Data is requested relating to a target object included in one of the systems. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.) Relevant systems including data relating to the target object are identified. (*See* page 11, line 6, through page 12, line 23;

and Figs. 10 and 19.) The data regarding the target object is retrieved from identified relevant systems utilizing the standard interfaces. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.)

The invention recited in independent claim 17 relates to a computer-based system for retrieving and accessing data. (*See* page 1, lines 8-15.) The computer-based system includes a plurality of systems storing the data, wherein the data is arranged for operating part of one or more electrical power networks. (*See* page 8, lines 10-32; and Figs. 1 and 2.) The system includes user standard interfaces 5 having standard object-oriented navigation and selection, and input and display methods. (*See* page 4, lines 32-36; and Fig. 1.) The interfaces are provided with context sensitive navigation functions that indicate which system is active. (*See* page 5, lines 3-7; page 8, line 34, through page 9, line 7; and Figs. 1 and 3.) A virtual asset register includes elements of the systems. (See page 8, line 29; page 9, lines 23-25; page 12, line 25, through page 14, line 4; and Figs. 2, 12, and 13.) The virtual asset register includes a model for exchange of data between the systems (page 13, lines 18-10; and Figs. 13-16), a mechanism for data consistency in data exchange between the systems (page 13, lines 20-26; and Figs. 13-16), and cross-reference and mapping of relationships of the elements of the systems (page 13, lines 27-36; and Figs. 13-16). Similar elements in different systems are consistently represented in the virtual asset register. (*See* page 5, lines 7-10; page 11, lines 25-27; page 12, lines 25-27; and Figs. 3 and 12.) Objects added to the systems are registered in the virtual asset register. (*See* page 15, lines 23-24.) The system also includes object templates upon which new objects created in each relevant system are based (page 15, line 25), a plurality of databases 2bm 4b (page 8, lines 10-21) and a data communication network (page 19, lines 17-19) and a human

machine interface (HMI) (page 8, lines 18-21 and 27-31; and Figs. 1 and 5-11) provides navigation and access (page 4, line 35, through page 5, line 1) to at least one of at least one SCADA system or database as well as to at least one of any system or database from the list of: ERP, GIS, CMMS, WO, WMS, PM (page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; and Figs. 4-10, 14-16 and 18). A consistency establisher is configured to establish a consistency of accessed or retrieved data in the new object and relevant systems utilizing mapping data related to a new object to be added to the data using the virtual asset register. (*See* page 4, lines 15-17; page 5, lines 7-17; page 8, lines 17-18; page 11, lines 24-27; page 12, line 25, through page 13, line 2; page 13, lines 20-26; page 14, lines 15-29; and Figs. 1, 12 and 14-16.) One or more members check the consistency of attributes of any data so accessed or retrieved data by identifying at least one of the or each new or given object or copies of the new or given object in any separate system and comparing attributes of all such copies of the same new or given object from each of the separate systems. (*See* page 4, lines 15-17; page 5, lines 7-17; page 8, lines 17-18; page 11, lines 24-27; page 12, line 25, through page 13, line 2; page 13, lines 20-26; page 14, lines 15-29; and Figs. 1, 12 and 14-16.) A data requester is configured to request data relating to a target object included in one of the systems. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.) An identifier is configured to identify relevant systems including data relating to the target object. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.) A data retriever is configured to retrieve the data regarding the target object from identified relevant systems utilizing the standard interfaces. (*See* page 11, line 6, through page 12, line 23; and Figs. 10 and 19.)

As recited in claim 18, which depends from claim 17, the computer-based system may further include one or members for: adding a new object; automatically establishing a connection between said relevant systems and the new object; and for replicating data related to the new object to other systems and relevant systems. (*See* page 9, lines 7-8; page 15, lines 23-26 and 36; and Figs. 3 and 17.)

According to claim 19, which depends from claim 18, the computer-based system may further include one or members for maintaining object connections, providing connection or connections utilizing a layer with a structured text document protocol, and mapping the new object utilizing a structured text document model. (*See* page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; page 17, line 33, through page 18, line 13; and Figs. 1, 2, 4-10, 14-16, 18, and 19.)

Claim 20, which depends from claim 19, recites that the computer-based system, wherein any of the structured text document protocol layer, or the structured text document for mapping the new object are implemented with a CIM/XML model. (*See* page page 17, line 33, through page 18, line 13; and Figs. 1, 2, 4 and 19.)

As recited in claim 22, which depends from claim 17, the asset register includes a list of power network assets, wherein the list includes in turn cross reference and mapping data for objects that are at least one of represented or stored in a SCADA system and in any system from the list of: GIS system, ERP system, CMMS system. (*See* page 11, lines 67; page 13, lines 27-

36; and Figs. 8, 9, and 13-17.)

According to claim 23, which depends from claim 17, the asset register includes a list of references for all objects representing individual items of at least one of physical or logical equipment included in the one or more parts of the power network. (*See* page 5, lines 7-16; page 9, lines 7-14; page 9, lines 20-25; page 12, line 35, through page 13, line 2; and Figs. 3 and 12.)

Claim 24, which depends from claim 23, recites that the list includes a master list of all objects in the one or more parts of the said power network together with the mapping data for each object according to a CIM model. (*See* page 5, lines 7-16; page 9, lines 7-14; page 9, lines 20-25; page 12, line 35, through page 13, line 2; and Figs. 3 and 12.)

As recited in claim 25, which depends from claim 24, object data for the objects included in the master list of the asset register may be stored in at least one separate system including any of a system for: SCADA, GIS, CMMS, ERP, PM, WO. (*See* page 14, lines 6-29; and Figs. 14-16.)

According to 26, which depends from claim 24, the asset register may be a virtual asset register, which does not include any object data for the objects comprised in the master list and includes only link information or cross reference data or mapping data. (*See* page 12, line 25, through page 13, line 2; page 13, line 33, through page 14, line 4; page 14, lines 15-29; and Figs. 14-16.)

Claim 27, which depends from claim 17, recites that the virtual asset register may be implemented according to an XML or CIM model or document. (*See* page 9, lines 16-26; page 13, lines 4-15; page 17, line 33, through page 18, line 13; and Figs. 12 and 13.)

As recited in claim 28, which depends from claim 17, the computer-based system may further include an HMI that may include object data accessed or retrieved or stored in at least one of a SCADA system or database as well object data originating in at least one of any system or database from the list of: ERP, GIS, CMMS, WO, PM. (*See* page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; and Figs. 4-10, 14-16 and 18.)

According to claim 29, which depends from claim 17, the computer-based system may further include a display including a human-machine interface for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks, which HMI includes data accessed or retrieved from or stored in a SCADA system, and also including data accessed or retrieved from or stored in any from the list of: GIS system, ERP system, CMMS system, PM system, WO system. (*See* page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; and Figs. 4-10, 14-16 and 18.)

Claim 30, which depends from claim 29, the human-machine interface may include at least one graphical user interface a data manipulator configured to manipulate the data retrieved from or stored in the SCADA and any of the systems for at least one of GIS, ERP or CMMS.

(See page 11, lines 6-26; and Fig. 10.)

As recited in claim 31, which depends from claim 29, the human-machine interface reads out any object property independent of source. (*See* page 15, line 32.)

According to claim 32, which depends from claim 29, the human-machine interface may include access to simultaneous data stored in or held by any of the list of: SCADA system, GIS system, ERP system, CMMS system, PM system, WO system. (*See* page 8, lines 10-32; page 9, lines 23 and 30-34; page 10, lines 8-11 and 24-26; page 16, line 1; page 12, line 25, through page 13, line 15; page 15, lines 4-14; and Figs. 4-10, 14-16 and 18.)

The claimed invention provides a method, system and virtual asset register in which integration is carried out in such a way that data across the different systems is kept consistent. In addition, the claimed invention provides a new and improved platform with which to support asset management applications.

Also, the claimed invention provides standard object-oriented navigation, selection, input and display methods across a series of user interface navigation displays. The displays can provide timely access to all relevant information from all integrated systems. The integrated systems provide simple and unified ways to navigate between different functional views, technical views or contextual views of the same process equipment, device, installation or other network asset. Furthermore, the claimed invention provides one consistent asset representation using a virtual asset register that includes single data entry, automatic synchronization, data exchange between

applications. The integrated systems do not require any other special provisions. The claimed invention permits consistency checks to take place in the background. Still further, the claimed invention and reduce data maintenance costs for a network, optimize service life of equipment, increase quality of asset data, and improve decision support.

Grounds Of Rejection To Be Reviewed On Appeal

I. The Examiner rejected claims 1, 7, 9, 10, 12-15, 17-20 and 22-32 under 35 U.S.C. § 103(a) as being unpatentable over Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al.

II. The Examiner rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. and further in view of DeVos et al.

Argument

I. Claims 1, 7, 9, 10, 12-15, 17-20 and 22-32 are patentable under 35 U.S.C. § 103(a) over Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al.

The combination of Zhu et al., Bashant, and Budhraja et al. does not suggest the invention recited in independent claims 1 or 15 since, among other things, the combination does

not suggest providing the interfaces with context sensitive navigation functions that indicate which of a plurality of systems is active, providing a virtual asset register that includes elements of the systems, a model for exchange of data between the systems, and cross-reference and mapping of relationships of the elements of the systems, and checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register. The Examiner asserts that pages 46-47 and Fig. 11 of Zhu et al. suggests standard interfaces. However, neither this passage nor this figure suggests such interfaces.

Rather, on page 46, Zhu et al. describes and Fig. 11 illustrates multiple consumer services, such as Bidding Service, EMS Service, SCADA Service, etc. As stated on page 46, the "services initiate service requests and consume responses". This passage goes on to state that the "services are normally user interface (UI) services". Furthermore, the UI services "perform tasks such as requesting information from a user or passing information to a user".

Significantly, Zhu et al. does on to state that, "Some UI consumer services are built to separate the specific user interface implementation from the more general dialog flow and backend interactions." This, along with Fig. 11, clearly suggests that that each element includes its own user interface (UI). Still further, on page 47 Zhu et al. describes UI consumer services and a distribution operator UI and how different information may be cached for display.

Additionally, Fig. 8 on page 45 of Zhu et al. also suggests that the different interfaces. This discussion clearly suggests that Zhu et al. does not suggest standard user interfaces and input and display methods.

The Examiner asserts that Page 45, first paragraph, suggests data consistency. It appears as if this paragraph only suggests orchestration service. There is nothing in this paragraph that suggests data consistency as recited in the claims as described in the specification.

Furthermore, Zhu et al. at page 46, Service-Based Architecture, third paragraph, only relates to utility services, but none of the other services described in the first paragraph of this section. This suggests that there is no replication of data among all of these services. Zhu et al. appears to suggest web-based communication among elements of a power system. Zhu et al. suggests that "legacy" systems will simply operate as before.

Bashant does not suggest any of the elements of the claimed suggestion not suggested by Zhu et al. Along these lines, Bashant does not suggest providing the interfaces with context sensitive navigation functions that indicate which of a plurality of systems is active, providing a virtual asset register that includes elements of the systems, a model for exchange of data between the systems, and cross-reference and mapping of relationships of the elements of the systems, and checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register. Bashant only suggests adding data of known types of object, such as claims, billing, and web sales. Additionally, Bashant relates to synchronizing related data storage elements in disparate storage systems. The same data is entered in each system, as described at col. 10, lines 6-8. On the other hand, the claimed invention relates to disparate systems in which data may be separately entered in each system and then the method according to the claimed invention processes the information so that the data may be exchanged between disparate

systems and duplicated in each system. The claimed invention is not a simple entry of the same data in a number of times in systems.

Additionally, Bashant et al. requires an application to send to a hub a header with new data so that it will be known where the data might be placed in a related system, as described at col. 6, line 45, through col. 7, line 10. As such, Bashant et al. requires modifications to or intervention in existing systems. On the other hand, as illustrated, for example, in Figs. 1 and 2, the claimed invention includes a system that does not require such modifications or intervention. This makes the claimed invention simpler, less costly and easier to implement since systems do not need to be modified to send out such headers. The claimed invention is meant to eliminate the need for generating elements such as headers required by Bashant et al. Additionally, Bashant et al. states that the header is necessary when data is changed as described at col. 10, line 65, though col. 11, line 6. The headers require the user of a system to know data that is automatically provided by the claimed invention. Without headers, the system suggested by Bashant et al. does not function.

Budhraja et al. does not suggest any of the elements of the claimed invention that are not suggested by Zhu et al. and/or Bashant. Along these lines, Budhraja et al. does not suggest providing the interfaces with context sensitive navigation functions that indicate which of a plurality of systems is active, providing a virtual asset register that includes elements of the systems, a model for exchange of data between the systems, and cross-reference and mapping of relationships of the elements of the systems, and checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register. The Examiner only cited Budhraja

et al. as suggesting interface elements. Even if Budhraja et al. suggested such interface elements, Budhraja et al. does not suggest the elements of the claimed invention not suggested by Zhu et al. or Bashant.

In view of the above, the combination of Zhu et al., Bashant and Budhraja et al. does not suggest the invention recited in claims 1, 7, 9, 10, 12-15, 17-20 and 22-32. Therefore, the combination of Zhu et al., Bashant and Budhraja et al. does not make the invention recited in claims 1, 7, 9, 10, 12-15, 17-20 and 22-32 obvious. Accordingly, Applicants respectfully request withdrawal of this rejection.

II. Claim 8 is patentable under 35 U.S.C. § 103(a) over Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. and further in view of DeVos et al.

The combination of Zhu et al., Bashant, Budhraja et al. and DeVos et al. does not suggest the invention recited in claim 8 since, among other things, the combination does not suggest providing the interfaces with context sensitive navigation functions that indicate which of a plurality of systems is active, providing a virtual asset register that includes elements of the systems, a model for exchange of data between the systems, and cross-reference and mapping of relationships of the elements of the systems, and checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register, replicating data related to the new object from the new object to other systems and relevant systems, establishing a consistency of accessed or retrieved data in the relevant systems by mapping the new object using the virtual

asset register or checking a consistency of attributes of the accessed or retrieved data utilizing a virtual asset register by identifying at least one of the new or a given object or copies of the new or a given object and comparing attributes of all copies of the same new or given object. The Examiner only cites DeVos et al. as suggesting using a common information model with a resource description framework and a uniform resource identifier compatible with as an identifier with a standard for the resource description framework. These elements do not suggest the other aspects of the claimed invention not suggested by Zhu et al., Bashant, or Budhraja et al.

Accordingly, the invention recited in claim 8 is not obvious in view of the combination of Zhu et al., Bashant, Budhraja et al. and DeVos et al. Thus, the combination of Zhu et al., Bashant, Budhraja et al. and DeVos et al. and Applicants respectfully request withdrawal of this rejection.

Conclusion

The combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. does not suggest the invention recited in claims 1, 7, 9, 10, 12-15, 17-20 and 22-32. Therefore, the combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. does not make the invention recited in claims 1, 7, 9, 10, 12-15, 17-20 and 22-32 obvious. Accordingly, the invention recited in claims 1, 7, 9, 10, 12-15, 17-20 and 22-32 is patentable over the combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al.

The combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. and further in view of DeVos et al. does not suggest the invention recited in claim 8. It follows that the combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. and further in view of DeVos et al. does not make the invention recited in claim 8 obvious. Consequently, the invention recited in claim 8 is patentable over the combination of Zhu et al. in view of U.S. patent 6,636,875 to Bashant et al. and U.S. patent publication 2005/0033481 to Budhraja et al. and further in view of DeVos et al.

In view of the above, Applicants respectfully request reversal of the rejections and issuance of the Notice of Allowance.

The undersigned authorizes the Commissioner to charge insufficient fees and credit overpayment associated with this communication to Deposit Account No. 22-0261.

Respectfully Submitted,

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Appendix A

Claims On Appeal

1. A method for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks, the method comprising:

providing the systems with user standard interfaces having standard object-oriented navigation and selection, and input and display methods,

providing the interfaces with context sensitive navigation functions that indicate which system is active,

providing a virtual asset register comprising elements of the systems, the virtual asset register comprising a model for exchange of data between the systems, a mechanism for data consistency in data exchange between the systems, and cross-reference and mapping of relationships of the elements of the systems, wherein similar elements in different systems are consistently represented in the virtual asset register,

adding a new object and data related to the new object into a first system,

adding a copy of the new object into a plurality of relevant systems,

registering the new object in the virtual asset register,

creating the new object in each relevant system based on object templates,

establishing automatically a connection between said relevant systems and the new object,

replicating data related to the new object from the new object to other systems and relevant systems,

establishing a consistency of accessed or retrieved data in the new object and relevant systems by checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register by identifying at least one of the new or a given object or copies of the new or a given object and comparing attributes of all copies of the same new or given object,

requesting data relating to a target object included in one of the systems,

identifying relevant systems including data relating to the target object, and

retrieving the data regarding the target object from identified relevant systems utilizing the standard interfaces.

2. The method according to claim 1, further comprising:

maintaining object connections for the new object and for any other object that is at least one of accessed, retrieved or stored by a SCADA system as well as by any system from the list of: GIS system, ERP system, CMMS system, PM system, WO system, WMS system.

3. The method according to claim 2, further comprising:

mapping at least one of the new object or copies of the new object using a model based on a CIM/XML document.

4. The method according to claim 2, further comprising:

mapping attributes of at least one of the new object or copies of the new object using a model based on a CIM/XML document.

5. The method according to claim 1, further comprising:

establishing the automatic connection or connections between copies of the same object in different systems utilizing a CIM/XML layer.

6. The method according to claim 1, further comprising:

mapping the new object utilizing a virtual asset register dependent on at least one of the CIM/XML layer or mapping.

7. The method according to claim 1, further comprising:

selecting an object utilizing an identifier in any said relevant system.

8. The method according to claim 7, wherein the identifier may be a Uniform Resource Identifier compatible as an identifier with a standard for Resource Description Framework.

9. The method according to claim 4, further comprising:

accessing one or more object attributes of the new object and changing an object attribute of the new object in a source system.

10. The method according to claim 4, further comprising:

updating an object attribute of the new object in the source system.

12. The method according to claim 1, further comprising:

deleting an object by deleting the object in all relevant systems.

13. The method according to claim 12, further comprising:

deleting an object by deleting a defined object in each system.

14. The method according to claim 13, further comprising:

deleting an object by deleting object connections to a deleted object or deleted defined object.

15. A computer program product for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks, the computer program product comprising:

a non-transitory computer readable medium; and

software code portions or computer code recorded on the computer readable medium to cause a computer or processor to carry out the steps of

providing the systems with user standard interfaces having standard object-oriented navigation and selection, and input and display methods,

providing the interfaces with context sensitive navigation functions that indicate which system is active,

providing a virtual asset register comprising elements of the systems, the virtual asset register comprising a model for exchange of data between the systems, a mechanism for data consistency in data exchange between the systems, and cross-reference and mapping of relationships of the elements of the systems, wherein similar elements in different systems are consistently represented in the virtual asset register,

adding a new object and data related to the new object into a first system,

adding a copy of the new object into a plurality of relevant systems,

registering the new object in the virtual asset register,

creating the new object in each relevant system based on object templates,

establishing automatically a connection between said relevant systems and the new object,

replicating data related to the new object from the new object to other systems and relevant systems,

establishing a consistency of accessed or retrieved data in the new object and relevant systems by checking a consistency of attributes of the accessed or retrieved data utilizing the virtual asset register by identifying at least one of the new or a given object or copies of the new or a given object and comparing attributes of all copies of the same new or given object,

requesting data relating to a target object included in one of the systems,

identifying relevant systems including data relating to the target object, and

retrieving the data regarding the target object from identified relevant systems utilizing the standard interfaces.

17. A computer-based system for retrieving and accessing data, said computer-based system comprising:

a plurality of systems storing the data, wherein the data is arranged for operating part of one or more electrical power networks, the systems comprising user standard interfaces having standard object-oriented navigation and selection, and input and display methods, wherein the interfaces are provided with context sensitive navigation functions that indicate which system is active,

a virtual asset register comprising elements of the systems, the virtual asset register comprising a model for exchange of data between the systems, a mechanism for data consistency in data exchange between the systems, and cross-reference and mapping of relationships of the elements of the systems, wherein similar elements in different systems are consistently represented in the virtual asset register, wherein objects added to the systems are registered in the virtual asset register,

object templates upon which new objects created in each relevant system are based,

a plurality of databases,

a data communication network and which system includes an HMI providing navigation and access to at least one of at least one SCADA system or database as well as to at least one of any system or database from the list of: ERP, GIS, CMMS,WO,WMS, PM,

a consistency establisher configured to establish a consistency of accessed or retrieved data in the new object and relevant systems utilizing mapping data related to a new object to be added to the data using the virtual asset register,

one or more members for checking the consistency of attributes of any data so accessed or retrieved data by identifying at least one of the or each new or given object or copies of the new or given object in any separate system and comparing attributes of all such copies of the same new or given object from each of the separate systems

a data requester configured to request data relating to a target object included in one of the systems,

an identifier configured to identify relevant systems including data relating to the target object, and

a data retriever configured to retrieve the data regarding the target object from identified

relevant systems utilizing the standard interfaces.

18. The computer-based system according to claim 17, further comprising:

one or members for: adding a new object; automatically establishing a connection between said relevant systems and the new object; and for replicating data related to the new object to other systems and relevant systems.

19. The computer-based system according to claim 18, further comprising:

one or members for: maintaining object connections; providing connection or connections utilizing a layer with a structured text document protocol; and mapping the new object utilizing a structured text document model.

20. The computer-based system according to claim 19, wherein any of: the structured text document protocol layer, or the structured text document for mapping the new object are implemented with a CIM/XML model.

22. The computer-based system according to claim 17, wherein said asset register comprises a list of power network assets which list comprises in turn cross reference and mapping data for objects that are at least one of represented or stored in a SCADA system as well as in any system from the list of: GIS system, ERP system, CMMS system.

23. The computer-based system according to claim 17, wherein said asset register comprises a list of references for all objects representing individual items of at least one of

physical or logical equipment comprised in the one or more parts of the said power network.

24. The computer-based system according to claim 23, wherein the list comprises a master list of all objects in the one or more parts of the said power network together with the mapping data for each object according to a CIM model.

25. The computer-based system according to claim 24, wherein object data for the objects comprised in the master list of the asset register is stored in at least one separate system including any of a system for: SCADA, GIS, CMMS, ERP, PM, WO.

26. The computer-based system according to claim 24, wherein the asset register is a virtual asset register, which does not comprise any object data for the objects comprised in the master list and comprises only link information or cross reference data or mapping data.

27. The computer-based system according to claim 17, wherein the virtual asset register is implemented according to an XML or CIM model or document.

28. The computer-based system according to claim 17, further comprising:

an HMI that may comprise object data accessed or retrieved or stored in at least one of a SCADA system or database as well object data originating in at least one of any system or database from the list of: ERP, GIS, CMMS, WO, PM.

29. The computer-based system according to claim 17, further comprising:

a display comprising a human-machine interface for retrieving and accessing data stored in a plurality of systems arranged for operating part of one or more electrical power networks, which HMI comprises data accessed or retrieved from or stored in a SCADA system, and also comprising data accessed or retrieved from or stored in any from the list of: GIS system, ERP system, CMMS system, PM system, WO system.

30. The computer-based system according to claim 29, wherein the human-machine interface comprises at least one graphical user interface a data manipulator configured to manipulate the data retrieved from or stored in the SCADA and any of the systems for at least one of GIS, ERP or CMMS.

31. The computer-based system according to claim 29, wherein said human-machine interface reads out any object property independent of source.

32. The computer-based system according to claim 29, wherein the human-machine interface comprises access to simultaneous data stored in or held by any of the list of: SCADA system, GIS system, ERP system, CMMS system, PM system, WO system.

Appendix B

Evidence Appendix

None

Appendix C

Related Proceedings Appendix

None